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CHERNOBYL: FIVE YEARS LATER

April 26, 1991

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INTRODUCTION

April 26, 1991 marked the fifth anniversary of the Chernobyl nuclear disaster. As the attached report illustrates, Chernobyl's ecological, medical, social and political consequences continue to have a profound impact both within and outside the Soviet Union.

Five years ago, Chernobyl left its indelible mark on the world's consciousness. Given the monumental consequences of Chernobyl and its devastating toll on the environment and on the health of the surrounding population, it is important that Chernobyl not be forgotten. Indeed, Chernobyl can never be forgotten by those most directly affected. It is an ongoing tragedy. And with each passing anniversary, we learn more about its devastating impact.

To commemorate this disaster, the Helsinki Commission hosted a briefing on April 26, 1991. Presentations on the consequences of Chernobyl were given by Dr. David Marples, a leading expert on Chernobyl from the University of Alberta, Canada; and by Dr. Natalia Preobrazhenska of Kiev, Ukraine -- a member of the Coordinating Committee of Green World, Ukraine's leading environmental association. At the briefing, they provided new information which has surfaced about the medical and environmental impact of Chernobyl and addressed its political and social ramifications.

We are pleased to be able to share the findings and perspectives of Dr. Marples and Dr. Preobrazhneska on the Chernobyl tragedy with you. We hope that the report will help to focus attention on this still very real and ongoing problem.

Dennis DeConcini

DENNIS DeCONCINI
Co-Chairman

STENY H. HOYER
Chairman

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CHERNOBYL: 5 YEARS LATER

Friday, April 26, 1991

Washington, DC

The session was held in room 2168 Rayburn House Office Building, Washington, DC, at 10 a.m., Samuel G. Wise, staff director, presiding; and Orest Deychakiwsky, briefing coordinator.

Moderator **Wise.** Good morning to you all. My name is Sam Wise, and I'm the staff director of the Commission on Security and Cooperation in Europe, the Helsinki Commission. The Commission is honored, Chairman Steny Hoyer and Co-Chairman Dennis DeConcini, to host this fifth anniversary commemoration of the disaster at Chernobyl.

We will hear from expert speakers on the disaster and its aftermath in a few minutes. First we will have a short film, which was produced recently by an Australian film company on Chernobyl then and now.

I think we are all aware from our memories and from recollections in the press recently of the epic proportions of this disaster, the disaster which has to rank foremost in history for its consequences.

It continues. It's not one that is over with. On the monetary side alone, I understand that President Gorbachev has said that the Soviet Union has spent $65 billion in the aftermath of Chernobyl and could imagine that it would go eventually to $350 billion. That's only on the financial side, which is clearly not the most important side.

I welcome all of you distinguished guests here this morning. I would extend that particularly to Ambassador Klimova of Czechoslovakia. We're pleased to have you with us.

I think we have an excellent program for you. I'll briefly tell you what we have in mind: first, this film that's about 10 minutes. Then we have Dr. Marples here, who has just returned from Kiev, who will speak, and have questions and

answers. Dr. Preobrazhenska will followup with additional opportunity for questions and answers.

So let's begin with the film.

[Whereupon, a film was shown.]

Moderator **Wise.** Our first speaker is Dr. David Marples, whom we're very pleased to have here today. Dr. Marples has had long continuing involvement with the Chernobyl disaster through lectures, radio-television appearances, articles in scholarly journals, has written two books on Chernobyl, and has acted as a consultant on Chernobyl for the State Department and Canada's Department of External Affairs.

Dr. Marples was also a public member of the Canadian delegation at the Sofia Environmental Conference of the CSCE in 1989. Currently he is Director of the Program for Study of Contemporary Ukraine at the Canadian Institute of Ukrainian Studies, and an Associate Professor of Soviet History at the University of Alberta.

He has visited Chernobyl on several occasions and has just returned from Kiev, where he participated in the Euro-Chernobyl II Conference.

Dr. Marples?

Dr. **Marples.** Thank you for that introduction.

It's never very easy to come directly from Kiev right to Washington because I took in so much new information that I've been trying to incorporate it since yesterday, when I returned to North America.

So what I think I'll do, I'll divide this briefing into six or possibly seven different sections: beginning with the cause of the accident revealed and the immediate death toll; then looking at the political authority over Chernobyl; the new conclusions about what to do with the reactor; new Ukrainian laws; new medical information; the economic situation; and, if there is time--this sounds rather ambitious--the situation of Soviet nuclear power today.

On the question of the causes of the accident, the Soviets in 1986 in August made a presentation to the International Atomic Energy Agency in Vienna. That report largely laid the

blame on operator error during an experiment performed on the reactor on April 26.

More recently a State Committee for the Inspection of Nuclear Power has conducted a new investigation into the cause of Chernobyl. This report, as far as I know, has not been officially released, but interviews have been conducted with the head of that commission and with several participants. And these interviews have been widely published in the Soviet Union.

The information in these interviews is basically as follows: first of all, that the experiment itself was not the cause of the disaster. This experiment was not an unusual one for the Soviet reactor.

The real problem was the nature of the control rods of the graphite reactor, which had graphite tips, but had been made, for economic reasons, much too short. The result was--and I'm not going to get into a scientific explanation here, but when the reactor was shutdown, the shortened tips caused the reaction in the reactor, which blew the top.

This commission has also mentioned that the Kurchatov Institute of Atomic Energy, which has the overall control of the design of the graphite reactor, had knowledge and information that there were 32 inherent flaws in this reactor.

Some of the scientists at the Kurchatov drew attention to these flaws as early as 1984. Those that did so were either ignored or fired as a result. Even after the accident itself, before the Soviet presentation to Vienna, these flaws were again highlighted and again ignored.

One of the participants in the commission also alleged that in April 1988, on the second anniversary of Chernobyl, when Valerii Legosov, the head of the Soviet delegation to the IAEA, committed suicide, he did so because he could not live with the deception performed at Vienna by the Soviet side.

This same commission report also maintained--and this was something that the "Washington Times" noted yesterday--that the IAEA accepted Soviet official figures as valid when, in fact, it had reason not to do so.

On the Chernobyl plant itself, as you know, three reactors are currently in operation at Chernobyl. In February 1990, the Ukrainian Government passed a law that the Chernobyl plant should be shut down by 1995, beginning with the first reactor in 1993, the second in 1994, and the third one in 1995.

At that time Ukraine did not have sovereignty. Sovereignty was declared on July 16, 1990. And now, in theory, the Chernobyl plant should be decommissioned over a gradual time.

Having been there, it is all too clear that there is a considerable amount of opposition to the shutdown of the Chernobyl plant. This opposition comes from the Ministry of Atomic Energy and industry in Moscow, which still possesses formal control over the station and by the director of the Chernobyl plant, Mikhail Umanets, and some of the chief engineers and operators there.

The argument against the shutdown is that technically the improvements have rendered this reactor much safer than in 1986; moreover, that to decommission the plant would cost more money than to keep it in operation in terms of things like storage of control rods, employment of staff over a long period to monitor not only the three reactors decommissioned, but the fourth buried reactor, the so-called sarcophagus.

On this question of the fourth reactor itself, there is no clear picture of what to do with this reactor. It has never been completely hermetically sealed because it's impossible to get close enough to do that. One idea is to have a second concrete shelf over the reactor, a second tomb, if you like, to bury the reactor to eternity.

The biggest single question is that no one knows how much radiation was released from that reactor in the first place. The initial report said 3.5 percent of the contents of the reactor core were released into the atmosphere.

Members of the Ukrainian organization Green World have maintained that a much higher figure than this was actually released and that otherwise one could not explain how much contamination there is in the Soviet Union today.

However, if the initial report is correct, that means that over 96 percent of the contents have remained in the core, and somehow these must be taken out before the reactor is buried permanently.

Around the nuclear powerplant, in addition, there is something like 800 nuclear waste dumps, which are basically only temporary dumps. They're not intended as permanent burial sites.

So this whole question of nuclear waste, which is such a major problem in the West today, is an immediate and pressing problem around Chernobyl itself.

The city of Pripyat--I'm sorry I missed the film. I had to go on a TV interview. I don't know whether it showed the city of Pripyat, which today is deserted. It's located about 2 miles from the Chernobyl plant.

In replacement of Pripyat, a new city is being built for the Chernobyl operators called Slavutich. It's located about 40 miles to the northeast of the Chernobyl plant. Currently about 20,000 people live there. It's mainly a young population, with an average age of about 26.

It was discovered last year that the city of Slavutich had been built on a radioactive patch. It had to be almost completely decontaminated. And around the edge of the town, currently a park area is being built to separate the city from the forest in the vicinity in order to protect the population.

But there is still the question of what the population will do if the Chernobyl powerplant is shutdown. And it's fair to say that in the city itself, there is a substantial amount of opposition to the proposed shutdown of the station.

Well, this was all off-the-cuff. I have a little bit different formal-type presentation. In terms of the fallout and remedial programs, after the accident, several Soviet institutions became involved in the aftermath of making decisions on which area should be evacuated, what sort of precautions should be taken, how the evacuated region should be controlled.

We know well that a Government commission led by a

rotating chairman took over the initial problems of Chernobyl. The chief scientists on the spot, in addition to Legosov, were Velikhov, the Vice President of the Soviet Academy of Sciences, and Ilyin, the Vice President of the Soviet Academy of Medical Sciences.

In addition to the initial firemen and first-aid workers, about 600,000 people were involved in some aspect of the cleanup campaign over a period of time and were subjected to very high doses of radiation.

For 3 years, most of the problems about Chernobyl were never addressed. The extent of radioactive fallout was never known. In 1988 Ukrainian activists drew attention to the radiation situation in Zhitomir Province to the west of Chernobyl and especially to the District of Narodichi, about 40 miles from the nuclear plant.

It was claimed there that mutations had occurred among newly born livestock at a rate never seen before on farms in this region. In some schools in Narodichi in 1989, one in every two school children were out of school with some sort of sickness.

Vladimir Kolinko, a reporter for the Novosti Press Agency and others, attributed these maladies to the children's subjections to high levels of radioactive iodine in the first stage after Chernobyl.

Several films were made about the situation in Narodichi, the most notable being Mikrofon. Reporters moved into the area en masse and reported levels of radiation that were still well above the normal background and the penetration of the soil by cesium that was over 15 curies per square kilometer, the official level for evacuation in the Soviet Union at that time.

The real problem is the levels of toleration of radiation for a population. The official Soviet dose after January 1, 1990 imposed by Ilyin was 35 rems of additional radiation over a natural lifestyle of 70 years for the population in the contaminated areas. And this corresponded approximately to the 15 curies of cesium in the soil as the level at which the

population should be evacuated.

Ilyin solicited international support for this new law. That is, international scientists agreed publicly that this level, 35 rems, was, in fact, safe.

But in Ukraine and Byelorussia, the public protests against the law were long and bitter. And it was argued that they did not take into account how much radiation had been received by the population in the first days and weeks after the disaster.

So after the declaration of state sovereignty in Ukraine, the Ukrainian Supreme Soviet appointed a Chernobyl Commission, led by Vladimir Yavorivsky, to investigate the problems caused by Chernobyl and to ascertain a safe level for exposure to the population.

This report was introduced into the Ukrainian Parliament this February and introduced what it called a general conception for the likely population living on radioactively contaminated regions. And this conception, in turn, gave basis to three new laws accepted by the Ukrainian Government.

The specific aim was to reduce what it called the negative influence of the Chernobyl disaster on the heath of the population. It introduced a law stipulating not 35 rems over a lifetime, but only 7 rems.

It divided the evacuation process into a first and second stage. The first stage was to be unconditional. That is, all the populations of areas would have to be moved. And here we're talking about 500,000 people.

This concerned cesium contamination of over 15 curies per square kilometer or over 5 curies in areas of high penetration of the soil, strontium levels of three curies or more, and plutonium levels of 0.1 curies and higher.

Stage II related to what was called guaranteed and voluntary evacuation. Generally, that lowered the toleration limits to 5 from 15 curies for cesium, 0.15 to 3 strontium, and for plutonium 0.01 to 0.1. And the Ukrainian Government was asked to provide the parliament on a progress report on the acceptance of this law by May 1991.

Now, when I was in Kiev, a considerable amount of new medical information was made available following a Conference of 27 scientific research institutes held at a Kiev medical laboratory and attended by the officials of the Ukrainian Ministry of Health.

The Ukrainian Minister himself, Yurii Spizhenko, made a speech in which he conceded that, in addition to radiation, there was also a tremendous contamination of the natural environment in Ukraine. So that children and adults suffering from radiation were also getting an additional dose of radiation from the normal industrial environment of the Ukraine.

I quote now from the release, the press release, from this conference. ''The results of the medical investigation of all categories of populations suffering as a result of the accident have given the opportunity to note tendencies to changes in the state of health.

''In 1990, according to the results of health investigation, 38 percent of adults and 43.4 percent of adults in the contaminated regions were declared healthy, but in 1988 the figure had been 47 percent of adults and 56 percent of children. The main illnesses,'' and I'm still quoting, ''are sicknesses of the lung, blood circulation, and the nervous system in adults.''

The conference went on to say that there was no unanimous viewpoint on the causes in the rise of sicknesses among children, but the increase in the illness rate among children is catastrophic.

At the Euro-Chernobyl Conference, more information was made available on the health effects of Chernobyl. It was noted, for example, by the Deputy Minister of Health that among children, only 5 percent of school children today are healthy in areas affected by radiation. Among newly born children, there has been a great increase in children with deformities.

According to the Ukrainian Institute of Gynecology, Ukrainian Academy of Sciences, there was a decrease last

year in reproductivity, an increase in deformations and misbalances in the endocrinological systems of pregnant women. Bleeding of the uterus was up by 300 percent. Changes were found in white blood cells.

For every 1,000 people examined in the Ukraine, 10 percent were suffering from serious illnesses. Among those who had been decontaminating the disaster; that is, the cleanup workers, many today are suffering from a decrease in fertility, skin diseases that are said to be almost impossible to cure, and are linked not only with increased radiation, but a decrease in the level of nutrition and psychological tension, a lack of vitamins, and soils with a lot of mineral content.

It is said also that the living conditions are simply inadequate for the people who live in these contaminated conditions.

Altogether, it is estimated that about 4 million people today are living in zones of high radiation fallout. Of this 4 million, about 2.2 million live in the Byelorussian Republic, which is more than one-fifth of the total population, and about 1.8 million in the Ukrainian region.

But I think it's only fair to add to that that the Ukrainian figure may be at its peak, where the Byelorussian figure could, in fact, rise. In addition, figures in areas like Russia and the Baltic Republics must be added to these totals. The fact is that in Ukraine, the process of investigation is much more advanced than in any of the other regions.

The biggest single problem for the Ukrainians is that they simply do not yet have political control over the territory being examined. Although the new Ukrainian law is coming into effect in July 1991, there is no information of how Ukrainians intend to take control over these regions.

Ukrainians are expected to sign a new union treaty sometime in June or July, which should almost certainly, if signed at all, give Ukrainian control over the Chernobyl plant and the area contaminated.

The problem is that the total cost of the Ukrainian program is something in the area of 20 billion rubles, or about

$25 billion by the current fixed exchange rate.

The Ukrainian Government currently has a debt of about 11 billion rubles. It's facing an economic crisis and has other areas that it must attend to in addition to the Chernobyl fallout. In other words, it simply cannot deal with a crisis of this nature.

At the Euro-Chernobyl Conference, the Ukrainian Deputy Minister of Health and Konstantin Masik, the member of the Ukrainian Government responsible for Chernobyl, issued an appeal internationally for assistance with the Chernobyl program.

In addition to simple expenses, Ukraine, or Byelorussia, for that matter, does not have the medical equipment to deal with Chernobyl. Many areas simply do not have enough Geiger counters to even measure radiation.

The radiation that has been measured so far has been done by individual teams from the Ukrainian Ministry of Health and the Chernobyl Commission, and this has resulted in maps published this year on every area of contamination in the Ukrainian Republic.

The result has been about 5 million hectares of agricultural land that has been declared to be contaminated as a result of radioactive fallout. These areas stretch not merely north and west of Chernobyl, but to the southwest, as far as Chernovtsy in Bukovina on the border of Romania, as far north as Volin, on the border with Poland, and as far east as the Russian city of Kursk, well outside the normal fallout area, and well to the south, incidentally, of the city of Kiev.

The city of Kiev itself is also, of course, a concern. There was yet another conference taking place in Kiev last week to investigate this.

It's been established by the Conference now that during the May Day Parade on May 1, 1986, when Kiev residents were out in the street, the dose of radiation to the thyroid gland may have been as high as 3 rems in the hour that the May Day Parade actually took place. And this is considerably higher than any previous figure that's been given. Radioactive hot

spots also fell out as far as Kiev. And the situation in Kiev is still being reviewed today.

Now, turning to the situation of the nuclear power industry in the Soviet Union, the situation is very complicated. There are, first of all, overall cutbacks to the program itself.

The dominant reactor type in the country is the VVER, or water-pressurized reactor, of which there are 24 currently in operation. And the Chernobyl-type reactor, or the graphite one, remains in service at Ignalina, in Lithuania, at Kursk, and Leningrad, and Smolensk, in addition to Chernobyl.

There are 15 graphite reactors currently in operation, altogether in the Soviet Union about 45 reactors, with nuclear power accounting for about 12 percent of total electricity production.

One has to compare this figure of 45 operational reactors with that of 62 closures or abandonments of new plant reactors. In short, future capacity was to have more than doubled, but every major building program has been halted or temporarily curtailed by public protest.

In Ukraine itself, the location of Chernobyl, there have been permanent stoppages of two new reactors in the Crimea and Chihirin and the abandonment of three nuclear power heating stations for major cities of Odessa, Kiev, and Kharkov.

Elsewhere reactor programs have been halted throughout the Soviet Union: in Armenia, for example, after the earthquake; in Rostov, the Tatar and Bashkir nuclear plants, and Minsk, Gorky, Voronezh, and Kalinin. In other words, the Soviet program is in a complete disarray as a result of public protests resulting from Chernobyl.

Chernobyl itself provided something like 10 percent of the nuclear-powered electricity in Ukraine, but Ukraine has imposed a moratorium on the building of any nuclear reactors.

Now, whether one likes or doesn't like nuclear power--this is probably not a diplomatic time to even state whether I do or not--the fact is that this energy cannot be compensated immediately by any form in Ukraine, in particular, and in the

European part of the Soviet Union.

Coal-fired thermal power stations are becoming increasingly less viable with the decline of the European coal field, and this situation has been exacerbated by coal miners' strikes, which are still continuing today in areas of Siberia and Ukraine.

Hydroelectric power has reached capacity in most areas of the European part of the Soviet Union. Solar energy doesn't seem to be very viable in outside areas, such as Crimea, which have high amounts of sunshine each day.

So in the short term, the Soviet Union is facing an energy crisis, I don't like the word ''crisis'' anymore, by the way. Every day there is a crisis in the Soviet Union. So what does the word ''crisis'' mean? There is definitely an energy deficit in the Soviet Union.

But I would add, perhaps as a final point, that the real problem with Chernobyl has not been information. It's been the lack of information. There was a concept that Chernobyl was the forerunner of Glasnost in the Soviet Union.

I would argue that Chernobyl was, in fact, the first casualty of Glasnost and that for the past 5 years, no major information has been made available until very recently.

And even to-date, were it not for environmental movements and political movements such as the popular Rukh in Ukraine, we still would not have this information.

The Soviet health authorities, the Soviet Ministry of Nuclear Energy, have made every effort to prevent this kind of information from reaching the public, ostensibly because they are afraid that panic will result. But, in reality, I would suggest it is to preserve bureaucratic interests and centralized control over the economy of different republics.

This may be understandable. It's very hard for any kind of ministry to give away power voluntarily, but the results have been that the situation stays far worse than it needs to be.

I think the future now will depend on two factors: first of all, how much international help--and that is coordinated help--with republican authorities can be undertaken over, say,

the next 5 years.

Without this international help, whether it be through the United Nations, the World Health Organization, the International Atomic Energy Agency, the Soviet Union faces a catastrophe because of Chernobyl.

The second point is the political situation. Having been in Kiev this past week, I can't emphasize too much how volatile this situation is. Every single day there, there were demonstrations in the streets with coal miners, students, and, in turn, vans upon vans of militia blocking every exit, controlling the Supreme Soviet, guarding the government building, guarding the statues of Lenin, preparing for any eventuality, and certainly looking at this as if some kind of national popular uprising is about to take place.

The political situation is extremely unstable, but one could argue, whether one looks at the local Communist Parties, the Popular movements, the Green movements, or the Separatist movements, the feeling is unanimous. We have to take control of our own economies from the center away from Moscow. And until we do this and until this is recognized abroad, then we cannot overcome disasters of the nature of Chernobyl.

Thank you.

[Applause.]

Moderator **Wise.** Thank you very much. I think it is very, very much appreciated to have you here.

Dr. Marples, having just returned from Kiev, has found himself with a very busy schedule today. This is the first of five appearances he will have. Nevertheless, he has offered to answer some questions before he has to leave. And I would invite your questions at this point.

Mr. **Questioner.** Do you have any information that this disaster has affected the Soviet ship propulsion in your program?

Dr. **Marples.** I don't have a lot of information on that, ''No.'' I mean, intrinsically, ''Yes''; in fact, all aspects of the nuclear program in the sense that it can no longer be planned

from the center.

And this program was planned from the center. There was no republican component in this program whatsoever. So, in a sense, it's probably going to have to be completely revised and transferred to the local level if it takes place at all.

And my feeling is, it's not likely to continue.

Mr. **Questioner.** You mentioned that coal is no longer a viable source of energy in Europe. And I think you also said in Ukraine. Because of strikes or is it because of lack of coal?

Dr. **Marples.** It's not lack of coal. It's the lack of easily accessible coal. The coal is there, but it's buried in very deep mines on thin slopes, it seems. So it's extremely difficult to get at without a tremendous rise in investment.

More viable are the Donbass Coal Fields in Siberia. The problem with that coal field is getting the sufficient transportation to the European part of the country. The Soviet transportation system is a shambles. It's simply overloaded right now.

There has been a suggestion, you know, that you could have things like coal slurry or you could try and improve the cleanliness of thermal power stations operating on coal, but, again, I think these are long-term programs.

The coal miners' strikes have just simply made a bad situation worse, and it's difficult to know how the industry in the European coal field can recover because, as you probably know, even a sort of week away from the coal field can mean the collapse of the entire seam, especially with the primitive sort of pit props they have in the Donbass Coal Field.

So I think it's a long-term problem now. And whether it can be resolved depends on the Siberian situation.

Ms. **Questioner.** Could you clarify for the members again how many actual reactors are currently functioning in Ukraine, in the Soviet Union? And what percentage of the different energy that's produced in the Ukraine is used internally in the Republic and how much is shipped out? And where is it shipped out to?

Dr. **Marples.** OK. I mentioned there were 15 reactors in

the Soviet Union.

Ms. **Questioner.** Fifteen reactors in the Soviet Union?

Dr. **Marples.** I'm sorry. Forty-five reactors. Forty-five reactors in the Soviet Union, 15 in the Ukraine. I probably have to do some--I can tell them all individually, but if I can add them up in my head?

There are five at Zaporozhye, three at Chernobyl, three at Rovno, three in south Ukraine. How many does that make?

[Laughter.]

Dr. **Marples.** In terms of the proportion in the Soviet Union, I mentioned that they have about one-third in Ukraine; it makes it about 25 percent of all the electricities from nuclear powerplants; about 10 percent is exported, mainly to East European countries, like Hungary, Poland, I believe, and Romania.

Ms. **Questioner.** So 90 percent of that 25 percent is actually used internally in the Republic?

Dr. **Marples.** Yes. Well, not necessarily in the Republic, also in Byelorussia.

Moderator **Wise.** OK. Over on this side anybody?

Ms. **Questioner.** Yes. In the film they mentioned two possibilities for dealing with the reactor at Chernobyl. One was covering it over with cement, and the other one was removing the material and disbursing it elsewhere.

When you were speaking, you mentioned the one possibility of covering it with cement. Has there been any new information on that? Is that the alternative that they presently are looking at?

Dr. **Marples.** Yes, that seems to be the alternative. The one about removal, the authorities suggested sort of grassing over the area as well. But, again, the real problem is: How much is in there? How do you remove it? And what do you do with it when you have removed it?

So far there are no long-term waste disposal programs in the Soviet Union. There was a move a couple of years ago to build a reprocessing plant, but it fell through because of public protests by the population of Kiev.

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The reactor is unstable in the sense that there's a reactor cap which weighs about 2,000 tons, which was flung off by the explosion, and is now hanging over a shaft. And the fear is that if it drops into this shaft, then there will be a lot of radioactive dust produced as a result.

So right now there are programs underway to put liquid onto this cap so that the dust will stick to this. And the director of the plant said that it's only falling at a few millimeters a year. There's not going to be any sort of great crash into the shaft.

But, having said that, the public is completely paralyzed with fear over what will happen to this reactor and, in my view, quite rightly since there is no real program so far. But it is the number one problem of today.

Mr. **Questioner.** There have been fairly persistent reports, especially recently, that the actual death toll over the last 5 years has been anywhere from 5,000 to 10,000. The Soviets still insist that it is only 31 who died.

Are these reports credible? And if they are, why can't we nail it down firmly?

Dr. **Marples.** Well, first of all, the reports are credible. I'll just give one example, and then I'll suggest why I don't think they have nailed down a firm figure.

Last year in Canada, I invited a Chernobyl official to stay with us. And while he was there, I persuaded him to give an interview, which I think was much more frank, having sort of eaten our meals for 2 weeks and been given escorts to West Edmonton Mall, and there are not many such places in Chernobyl.

And I asked him about the figure in the Ukrainian Parliament that 5,000 people may have died, and he said it was accurate. He said he couldn't give an actual figure, but he did know personally many cleanup workers who had suffered from heart attacks and other illnesses and subsequently died.

The real problem is one of monitoring who is in the zone, how long they were there, and what kind of radiation levels they received. It has been reported by many cleanup workers

that their Geiger counters either didn't work or only registered 5 rems of radiation when, in fact, some of them are on the reactor roof and actually were getting even up to 100 rems at a time.

No record was kept of people who were from the military reservists in the zone in the summer of 1986. This information, if it is kept by anyone, is kept by the Soviet Ministry, but it's never been released.

So we simply do not know the names of everyone who was in the zone. The most recent estimate I saw was 7,000 dead so far and 50,000 with radiation sickness, but, again, even this figure is uncertain. All you can say is that the death toll is definitely in the thousands now.

The 31 figure was never real. It never was a reality. It was alleged there were 28 dead from radiation and 3 from either falling debris or--you know, I think one just got buried by the initial explosion. But this death toll never rose.

I monitored several deaths. For example, the head of the Ministry of Machine-Building responsible for Chernobyl--that's the atomic weapons industry--died of radiation sickness. The Ukrainian film-maker Vladimir Shevchenko died of radiation sickness.

Boris Shcherbina, the head of the Government commission, is now dead. It's alleged that he had radiation sickness. It's not known, of course, because there are never any correlations made between people who are in the zone and the illnesses they've got.

As a final example, I could just give one that was given by Lyubov Kovalevska a couple of years ago. She wrote an independent examination of the health effects of Chernobyl, and she mentioned a military reservist from Moscow who was trained in Estonia and subsequently sent to Chernobyl in July 1986.

When he got back to Moscow, his mother found in a suitcase a commendation for his work at Chernobyl. Subsequently, over the next 6 months, he lost his hair. He lost all his teeth. He suffered from restlessness. He wasn't able to

eat. And he died.

When the doctor examined him, he said that he died of radiation sickness. By the time he got to the morgue, the official reason was, ''Well, he died of some little known poison.'' The mother then called up the Ministry of Defense, who told her that he was never at Chernobyl.

And this is just one example of how difficult it is to get information on the casualties.

Mr. **Questioner.** You mentioned two figures of costs. One was that Gorbachev said the costs of cleanup could go to $350 billion. Then the other one you mentioned was it may cost the Ukrainian Government, should they gain control, $25 billion. I'd like you to reconcile those numbers a little bit.

But then also I'd like you to comment on--the Ukrainian Government, it seems to me, needs help not only from organizations like the World Health Organization, which can provide a little bit of help, but certainly not in numbers like $25 billion.

So it seems to me that perhaps cost should be addressed by the U.S. Government.

Mr. **Voice.** Could you restate the question? We can't hear back here.

Mr. **Questioner.** Do you want to paraphrase it or shall I?

Dr. **Marples.** Yes. First of all, the question is on the dollar figures for the cleanup for the Soviet Union and Ukraine and how they relate to each other.

And the second question you'll have to repeat.

Mr. **Questioner.** Well, the second question basically is: You mentioned that the Ukrainian Government should seek help from organizations, from world health organizations.

And I'm suggesting that, in addition to that, the vast majority of the help could come, instead, from governments, like the U.S. Government and the Canadian Government.

Dr. **Marples.** So the second question is about international aid for the massive program to be able to tend to the consequences of Chernobyl.

And, actually, I didn't give the figure that you mentioned.

I don't know where that came from. Maybe it was in the movie.

Moderator **Wise.** I gave it.

Dr. **Marples.** Oh, you gave it?

Moderator **Wise.** Yes.

Dr. **Marples.** All right.

Moderator **Wise.** Because I heard this morning that Gorbachev had spoken today in the Soviet Union on Chernobyl and had used those figures.

Dr. **Marples.** Yes.

Moderator **Wise.** It's $65 billion up to now. I don't know whether he meant worldwide or in the Soviet Union or what, but possibly running to $350 billion.

Dr. **Marples.** OK. I don't think that figure is unrealistic. I gave the Ukrainian figure. The amount of fallout from Chernobyl to affect Ukraine was approximately, as near as you can say, about 17 percent. So that figure I mentioned refers to 17 percent of the area affected is a specifically Ukrainian program.

It has to be borne in mind that as bad as the situation in Ukraine is, the situation in Byelorussia is even worse. Specifically, the radioactive cloud passed over there first. And there's also a significant area of Russia also affected from Bryansk and just to the east of Ukraine.

And this figure takes into account not merely decontamination by Geiger counters, providing compensation to families, but even things like new housing has to be made available for anybody that moves.

If 4 million people have to be moved, they have to be housed. And in the Soviet Union, there's a long waiting list for apartments. So this is a massive program.

In terms of international aid, I think it has to be remembered that already there is significant international aid to victims of Chernobyl from, say, the children of Chernobyl campaigns in various countries like Israel, Cuba, France, United States, Canada, all providing aid to children of Chernobyl so far.

It's at the official level through the United Nations. The Ukrainians and Byelorussians have both already appealed for aid from the United States and from other countries. So the appeal has been made.

It's really a question of prioritizing for this Government over what is the most important way to help people, where can this aid best be directed because the first $50 million to find its way to Chernobyl victims disappeared and just went into some black hole. No one ever saw it again.

So how can you guarantee this money will get there or should you be, for example, like Greenpeace and open up medical clinics right in the middle of Kiev and operate it yourself?

It's perhaps a bit callous to say this, but in an academic sense it's sort of not. My position is not to say what people should do and how they should help. I think my job is really just to analyze the situation.

Moderator **Wise.** Yes, sir?

Mr. **Questioner.** As you know, Dr. Marples, there are approximately 300 nuclear reactors in the Western World outside of the Soviet Union. And I don't think you'd want us to think that all of those reactors are equivalent to the Chernobyl reactor and draw a conclusion from it because, as you know, American nuclear engineers have protested to the Soviets for over the last decade that the reactor in Chernobyl and that type of reactor was intrinsically unstable and had no containment vessels at all; whereas, the 300 others do.

Now, are you familiar with the engineering differences between the reactors in the rest of the world and the Soviet Union? Are you prepared to make a differentiation between the reactors in the Soviet Union and the reactors in France, England, Japan, Germany, and the United States?

Dr. **Marples.** Having said I wasn't going to come to make an opinion on that, I will not take the immediate challenge.

Mr. **Questioner.** Well, it's an important issue because if we extrapolate from what you say to issues in the Western World, Japan is going into the program.

Dr. **Marples.** Yes. And France has----

Mr. **Questioner.** As you know, France has 80 percent of its power in export power. We have a nuclear program in reactors, more coming on. And so it's very important for you, as a responsible citizen of Canada, who has checked out reactor programs that have been around, to make sure people understand the difference in the design and how that relates to the political system.

And I believe what happened in the Soviet Union, where the political system prevails, should safeguard what is happening in the Western world. I think that's the lesson of Chernobyl, rather than engineering design.

I'm not sure that has come through in your presentation today.

Dr. **Marples.** Well, I would say that the problems endemic to Chernobyl were a result of the economic planning system, first and foremost, which wanted a specific amount of capacity available by a given time. That is, the nuclear power program was part of the Soviet 5-year plan.

And in doing so--I actually wrote a book on this. So, you know, it's not like something I'm saying for the first time. But the Soviet system took shortcuts. For example, the Chernobyl-type reactors were not contained because they were fueled on line, and they felt it would be economically unfeasible to maintain them.

The main problems in terms of control of a possible accident were all geared to an accident from below the reactor, rather than from above the reactor. The operators themselves, although I just said that they weren't responsible directly for the accident, were terribly untrained.

Paul Goble once quoted a remark from an Armenian newspaper--sorry. It was an advertisement, ''Wanted: Nuclear operators for Ukraine. No experience necessary.'' And this, I think, is endemic in the Soviet industry.

In the West, there are reactors that use graphite; for example, in Britain and Canada, but the quality of the plants is undoubtedly much higher, the training is more rigorous.

But I think the main difference was one of philosophy. The Western attitude was accidents are bound to happen, and we must prepare for every conceivable accident.

The Soviet attitude before Chernobyl was: This is guaranteed to be safe. There cannot be an accident in the Soviet nuclear power industry. Of course, there had been accidents before, but they had been carefully concealed.

Having said that, I'm now about to play the devil's advocate and say that there is no such thing as a safe energy industry anywhere in the world, and the nuclear one is no exception.

Moderator **Wise.** Did you want to followup, sir?

Mr. **Questioner.** Yes. Can I just followup on one point? If the Chernobyl accident had been recorded in scientific literature fairly well--I'm not saying the health effects because they seem difficult to get to, but the fact is that the operators of the Chernobyl reactor, in order to conduct the experiment, which they were told not to conduct in their instruction manuals, disabled every interlock, safety interlock system against their rules.

So, you know, it's not operator error in the ordinary sense. It's deliberate operator error because they felt they wanted to run this experiment to see if they could close down the plant on residual heat in that reactor. And to conduct that experiment, it was stupid to disable every safety precaution interlock that they had.

Now, that's operator error. It's not a training error. They simply went against the rules that the Soviets told them to follow.

Dr. **Marples.** I don't think that's----

Mr. **Questioner.** That was noted again and again in the literature of the Chernobyl accident.

Dr. **Marples.** Yes. Well, I don't think that's entirely an accurate description of what happened. No operator in the Soviet Union is going to do anything on his own initiative. It's simply not part of the system.

That experiment that took place in Chernobyl was

supposed to have taken place at Kursk nuclear powerplant, but either the director or the chief engineer of the Kursk plant refused to do that experiment on the grounds that it was dangerous.

It was then transferred to Chernobyl, which was thought to have a good safety record. But it took place at a time when neither the director nor the chief engineer were at the plant.

This was part of the industrial system that the operators would have been told to dismantle these safety mechanisms. I cannot find any evidence that these operators made any mistake, according to the instructions they had been given. They followed the instructions.

The problem with these operators is they have no knowledge of how the control rods had this innate flaw. This is the thing that came out most startling from the new commission report from the atomic safety director.

The operators did not know that the reactor was unstable at low power. They did not know that these control rods could form the reaction in the core itself.

It is an essential right, I think, that there is operator error. It is operator error that is following the instructions that were obviously given from higher up.

But, on the other hand, this type of accident--I can't speak for the United States, but it couldn't have happened in Canada. There are enough safeguards to have still prevented that accident.

And the shutdown time of the reactor in Canada was something like 3 seconds. In Chernobyl, it was 20 seconds. According to the director of the plant, it has now been cut down to a level that's almost the same as in the West.

But at that time the reactor was incredibly slow in terms of shutdown time.

Moderator **Wise.** Yes, sir, in the back?

Mr. **Questioner.** Since the resources of the Republic of Ukraine are controlled from the center and there is very obviously difficulty in disbursing the funds to Chernobyl, what portion represents income to Moscow? How much does

Moscow estimate to receive in amounts from children campaigns and international aid?

Dr. **Marples.** Well, that situation has just changed over the past month because now Ukraine is simply taking out of the union budget the money that it wants to allocate to Chernobyl. At the present time both Ukraine and Byelorussia are holding money from Moscow in order to divert into the Chernobyl program.

It's hard to tell exactly what percentage this is of the total budget, but it's a significant one. It's in the region of 10 percent, somewhere around there. But this money is now being controlled already by the republican government.

Gorbachev had protested bitterly at the reduction of these funds, but, you know, before it was something like 95 percent of the resources of the campaign are completely controlled from Moscow, not from the Republic. So this system is slowly being changed now.

Mr. **Questioner.** Do they say they expect to raise some money to improve the conditions?

Dr. **Marples.** They did, yes.

Mr. **Questioner.** Oh, they did?

Dr. **Marples.** Yes. There are two programs in operation, still a union program to deal with Chernobyl, and now there's a Ukrainian and a Byelorussian program, which have superseded the old union program.

But the Republics can't simply deal with it without some kind of help from Moscow. And the argument is made that since the Ministry of Nuclear Power and the Chernobyl plant itself were controlled by Moscow and not by the Republic, that they should be responsible for the costs of the accident.

That may sound like a political argument, but it could become an economic one, too.

Moderator **Wise.** Two more. Sorry. In the back because they haven't had a chance. Yes, sir?

Mr. **Questioner.** You talked about the extent of contamination to the north. What about the contamination that might have flowed to the south and deeper? That's quite an

active recreational area as well, as you proceed to the south. Has there been much study done in that area?

Dr. **Marples.** There was a study done. The fact is that Chernobyl was on a system that led directly into the Dnieper from the Pripyat River to the Kiev Reservoir and to the Dnieper.

Yavorivsky commented this week that there was a real danger of radionuclides reaching as far down as the Black Sea. He didn't provide any figures on this. The Kiev Reservoir, until 1989, was not declared off limits even for fishing, but in 1989 it was.

And so now there has obviously been a danger perceived that this reservoir may have been contaminated by Chernobyl and that the contamination is gradually increasing, but no specific figures that I have seen have been given about the Dnieper River.

Having said that, the Dnieper River is so contaminated anyway that you may not even notice the extra radionuclides thrown in by Chernobyl.

Moderator **Wise.** One more in the back there? Next question?

Ms. **Questioner.** I have recently had an opportunity to see an article published in Moscow in 1989 about the power industry in Soviet Ukraine. It's a high-gloss article, a high-gloss brochure. And under the nuclear energy subject of Ukraine, they show the Chernobyl reactor.

They wrote about the safety of the nuclear program. And there is not even one word mentioned about the fact that previously, prior to this, an accident in Chernobyl had occurred, just a point of information.

Moderator **Wise.** Last question?

Ms. **Questioner.** One other question about the health aspect because right now--well, until recently, the Soviet Government issued decrees about reporting about the health consequences.

Have you noticed that internally there have been any changes? I mean, do you have any knowledge about whether

the Government is taking action to perhaps start the reports or start doing followup studies?

And is there any international pressure to have the Soviets start doing this so that we can learn from the experience?

Dr. **Marples.** Well, the local authorities have a program underway, but it's due to start in July. And this was simply the program of monitoring and decontamination and evacuation of the affected population.

But in terms of releasing health figures, the main center with a register was the Center for Radiation Medicine in Kiev. The center there, which I visited in 1989, gave a registry of something only like 1,100 people and gave a figure of 237 suffering from radiation sickness.

It's been said that this center is akin to some of the Brezhnev-like ministries of the past in terms of giving out accurate and open information on Chernobyl.

So there is a move now from the Ukrainian Ministry of Health to actually take over this center. Currently it's under the control of the Soviet Academy of Medical Sciences.

If that takes place, then it may be possible to make a larger register. This is one of the things in the Ukrainian laws, that a major register must be compiled of all the people it can find who were contaminated by Chernobyl and followup studies done.

There are different republican programs. There is still a union program. In terms of international pressure, I haven't noticed too much so far, but I think there may be more now that these new figures are being made available.

There are still skeptics around. There are still, I think, people who suggest that radiation may not have been the main cause of all these problems, that it was perhaps a result of other factors.

But I think there is evidence to show that the effects of low-level radiation may be greater than were previously thought. I'm not a medical doctor, but from all of the studies that I have done, that would be the logical conclusion. I don't really see how you could come to any other conclusion.

The rise in illnesses is so dramatic. In areas of Byelorussia, it's something like 1,000 percent of all types of illnesses in the contaminated regions. But it cannot be attributed to anything else other than Chernobyl.

You might say, for example, that these people are suffering from malnutrition or psychological tension, but radiation has obviously played a role as well.

So I imagine that in the future, organizations such as, say, the World Health Organization or the International Atomic Energy Agency may well focus on low-level radiation.

And, instead of comparing it with Hiroshima or Nagasaki, which is not comparable to Chernobyl, they might look at the new report in the Soviet Union on the Kyshtym tragedy of the 1950's or some of the declassified information from Windscale in Britain in 1957, which even now is still far from complete.

So I think the scale of the accident has surprised many people and actually may have made some people dubious, but I would say after 5 years, it has become overwhelming. And I think eventually there will be pressure on the Soviet Government or whatever government is in power to release more information.

Moderator **Wise.** Thank you very much, Dr. Marples. It has been a very, very informative morning, and we wish you the best of luck in your other speaking engagements today.

Dr. **Marples.** Thank you very much.

[Applause.]

Moderator **Wise.** We're very fortunate to have our second speaker. Almost by chance, we discovered that Dr. Natalia Preobrazhenska would be in town for another conference, and we were able to have her here with us today.

She is a member of the Coordinating Committee of the association Green World, Ukraine's leading environmental group, and a member of the Committee for Chernobyl Problems of the U.S.S.R. Council of Ministers' Commission for Extraordinary Circumstance.

Since 1965, Dr. Preobrazhenska has worked in the

Institute of Microbiology in the Ukrainian Academy of Sciences.

Mrs. Bozhena Olshaniwsky of the Americans for Human Rights in Ukraine will assist with the interpretation.

Dr. Preobrazhenska?

Ms. **Olshaniwsky.** Dr. Natalia Preobrazhenska thanks everybody for coming here and giving her an opportunity to make a statement. This is her statement for the press, which I will read for you for the sake of saving time.

She states, ''We are grateful for the aid that was sent from the United States to the people of Ukraine. The most important factor, however, is the direct interpersonal relations that are being developed between the people of the United States and Ukraine.

''I perceive the Chernobyl accident to be a global problem. On the fifth anniversary of this disaster, not only should we commemorate the memory of the fire fighters who gave their lives to save people of Ukraine, but also to secure the safety of Europe. These fire fighters understood very well what they were facing: the untamed nuclear demon which came straight out of hell.

''I might also mention the valiant coal miners who came to the rescue and built a concrete cushion under the damaged reactor block while working without protection and being exposed to radioactivity. These individuals also risked their lives and their health while sacrificing themselves to save others.

''Forgetting or ignoring the lessons of history leads to a path of damnation. Without memory there is no future. We must always remember that. The most important thing to remember is that we must not permit a repetition of Chernobyl.

''We must continue to develop a new type of individual, an individual who will care about the problems of this planet and not merely about his own local surroundings.

''When scientists present plans for a new project, they must be mindful primarily about the protection of people. As

Ihor Kurchatov, a famous Soviet nuclear physicist, stated, 'What are the benefits that will be derived from atomic energy? It can be a very costly experiment.' As we see it, the monetary costs are gigantic, but, more importantly, the costs in terms of human health and life are incalculable.

"We are concerned not only with the individuals who have perished, but for the present life of the ill and infirmed from the effects of Chernobyl and the life of future generations.

"To me, the Chernobyl disaster and the individual's reaction to it are indicators of that person's conscience. Only together, as a global community, will we be able to put the untamed Chernobyl genie back in the bottle.

"The Chernobyl misfortune affected not only Ukraine, but also Byelorussia, Russia, and beyond. Many individuals who were alarmed about this tragedy joined the Zeleny Svit Association in unearthing the information on Chernobyl and its aftereffects.

"Dr. Yuriy Shcherbak, a physician and author, reflected his concerns on the emotional and moral tragedy of this disaster in his book, 'Chernobyl.' This book sold out soon after its printing because it elicited wide public interest.

"Members of the Zeleny Svit-Green World come from all walks of life: professionals and non-professionals, men who have been in wars, mothers and grandmothers who dedicated their lives to protecting their children, et cetera. They encompass many nationalities, various religions, and party affiliations.

"The suffering from the Chernobyl disaster is not abating, but continues to spread in the newborn and in nature. Therefore, I believe that especially now, Ukraine must control its own destiny by becoming an independent sovereign country and not dependent on Communist Party bureaucrats with their coverup operations.

"Ukraine should develop friendly relations with other sovereign countries to expose the problems of Chernobyl and develop solutions to the benefit of all."

Thank you.

[Applause.]

Moderator **Wise.** Dr. Preobrazhenska will answer questions now if anybody has any. Yes, Ambassador Klimova?

Ms. **Questioner.** Has there been any link established between the Chernobyl disaster and leukemia?

Dr. **Preobrazhenska.** I would like to mention that in 1982--we recently found out--there was an atomic reactor explosion at the Chernobyl Power Station. From that time, 1982, there was an increase in leukemia in children in Ukraine.

We could not understand why, in the cemetery in Pripyat, there were so many children's graves. Chernobyl gave an answer to that. Accidents happened in Chernobyl not only in 1986, but previously in 1982--but on a smaller scale.

Moderator **Wise.** Did you have a question?

Ms. **Questioner.** Yes. I'd like to ask about Green World and its development in Ukraine. What is its membership? How broad are its programs?

Dr. **Preobrazhenska.** The Green World Association evolved immediately after the Chernobyl catastrophe. The Green World, or Zeleny Svit, Association has about one-half million members, which encompasses organizations as well as individual members.

Zeleny Svit is an umbrella for about 150 associative organizations. Some of them work forests, rivers, and nature in general in different parts of Ukraine.

At the outset of our establishment, we were persecuted and not permitted to speak out publicly. The first large public rally was held in Kiev. It drew many people from different Republics. Tens of thousands of people attended that rally.

Many of the members of our organization are scientists. Therefore, many of the suggestions or proposals that are presented by members of our organization are respected in the Parliament of the Ukrainian republican and in the all-Soviet Parliament. And we also have numerous members in those

parliaments who serve as deputies.

We have conducted many scientific studies. It is difficult to challenge the results because we work with facts. We have made a difference.

Moderator **Wise.** Any questions? In the back here?

Ms. **Questioner.** Beyond the Ukrainian Republic, what are your relationships with other environmental organizations and other Republics of the Soviet Union, particularly relationships with environmental organizations in Moscow?

Dr. **Preobrazhenska.** We have friendly relations with organizations in Moscow, as well as outside of the Soviet Union. However, the relations with the Moscow ones are not all that serious because they are usually on a casual basis.

Recently Mr. Hubanov from Moscow reported that he is concerned about the Chernobyl aftereffects but his statements have no substance. In fact, the money that was collected through telethons to aid victims of Chernobyl was misappropriated by the Moscow group. Instead of going to the victims, the money was given to the atomic agency--a contradiction of the purpose of the telethon.

We have serious relations with Europe, the rest of Europe.

Moderator **Wise.** On this side again? Yes?

Mr. **Questioner** (through interpreter). What is the opinion of the Green World Association about the Government building special hotels and planning special tourist tours of Chernobyl? What is your opinion about that?

Dr. **Preobrazhenska.** In February 1990, I spoke at a special session of the Supreme Council of the Parliament of Ukrainian which met in order to discuss problems of ecology. I inquired of the First Secretary of the Communist Party of Ukraine, Volodomyr Ivashko, to check the disastrous mess that was happening in the Chernobyl zone since, at this time, article 6 was still in force.

It is too bad that Dr. Marples is not here to hear this: that the policy of the Soviet Government is to take advantage of the Chernobyl tragedy. We, the ''Greens'' of Ukraine, insist that Chernobyl should be shut down completely because the

cover of the sarcophagus contains more than 1,000 square meters of holes. This makes it very dangerous.

The U.N. Commission should be informed in detail about the radioactive contamination of the water and soil. Periodic testing should be done.

Also, the world community should be informed periodically about the actual state of radioactivity in Chernobyl.

Mr. **Questioner.** If I may add, you missed the interpretation. Dr. Preobrazhenska said that she considered that the Soviet Government is using as a feeding trough Chernobyl now, and this turning Chernobyl into a tourist attraction is highly immoral.

The **Interpreter.** There was a gentleman here who made a statement that there is quite a bit of difference between atomic reactors or atomic powerplants in the West, in Europe, and the atomic plants in the Soviet Union.

She would like to make a statement that there is no such thing as a peaceful atom because you have created radioactive waste. In addition, you are going to have to do something with the waste, which has not as yet been solved by mankind. If we continue to keep creating more atomic waste, soon there will not be enough soil to bury it.

She considers the past 5 years as stultifying to human thought and wasting opportunities for creating alternative energy. We should strive to improve health and life and not to put our energy into creating death. The use of atomic energy is equated with death, as far as she's concerned.

Moderator **Wise.** Other questions? In the back, sir?

Mr. **Questioner.** About an hour ago on CNN reports, the official Soviet count for the Chernobyl accident was 62. Then it also said a Soviet senior scientist said there are up to 10,000 deaths because of the Chernobyl accident.

Which one does Mrs. Preobrazhenska favor?

The **Interpreter.** She wants to point out her personal observation without going into the official reports or statistics. She observed that people who have been evacuated from the

Chernobyl area and live in or near Kiev have many more sicknesses. Their mortality rate is very high. There immune systems have already been damaged and, as a result, there are more frequent ambulance calls than in the past.

They don't die of radiation sickness per se, but they die due to a tremendous increase of other sicknesses since they do not have the power to fight off various diseases.

It is similar to AIDS where a person loses the power to fight off disease.We call it radioactive AIDs. And this is what causes many deaths. Unfortunately, it is difficult to corroborate this because deaths have not been attributed to Chernobyl aftereffects.

It is painful for me to talk about this terrible situation in my country. Let it be mentioned here that Ukraine, as a Republic, cannot deal with the problem because it doesn't have the resources or the money to deal with it by itself. Any monies it receives comes from the central government.

But where does Moscow get its money? It comes from the Republics. So, you actually have to take the money away from the Republics, send it to Moscow, and then the center will send it back to the Republics.

And there is never enough because there just isn't enough money to go around. The central government in Moscow has been printing paper money, which is not substantiated by gold or wealth of the country.

Ms. **Questioner.** I'd like to ask the question not only about--well, besides the illness, the long-term genetic consequences of radiation exposure.

On my recent trip to Kiev, I was hearing rumors on the street by women who said that they were told by doctors that if they already had children, not to have any more. Young women were encouraged to leave the city if they want to bear children. Furthermore, that increases of miscarriages and abortions have risen dramatically since 1986.

Could you comment?

The **Interpreter.** She expects that it will take from 15 to 20 years for us to see the genetic aftereffects. In pregnancies

there is a tremendous increase in toxemias and anemias. The animals in Narodychi, in Zhytomyr Oblast, a town that is heavily contaminated have an increase in birth defects, such as an 8-legged colt and the like.

There was a report from a Great Britain atomic powerplant that male employees who fathered babies were normally healthy; however, their children had a 10 percent increase in leukemia. This is happening in a modern power plant and not in an old Soviet-style plant. This adds proof to the statement that there is no peaceful atom. Not only are young people dying, but also the young men who have been used in the cleanup of Chernobyl. They have been rendered sterile and cannot father children.

Moderator **Wise.** Any other questions?

[No response.]

Well, if not, thank you very much.

Dr. **Preobrazhenska.** I would like to remind you that at present there is a running argument going on with the academician Ilin, who defends the concept of 35 rads being safe for human life.

I believe that the International Agency for Atomic Energy and our local Moscow Mafia, as I'm calling them because their policies are criminal, are cooperating in this.

The atomic energy industry creates much money, and it's very attractive for the Governments to push this type of production. Mr. Ilin stated that the reaction of victims shows that they are psychologically imbalanced and need psychiatric help.

Mr. Blix, director general of the International Atomic Energy Agency, visited Kiev recently and met a Green World delegation. I gave him a button that depicts a pregnant woman as an atomic nucleus. He didn't quite understand what the symbolism meant. I asked him to give it to get an interpretation from his beloved wife.

I thank you for the concern that I saw in your eyes and for the caring for Ukraine. I wish you much happiness and success especially to your children and grandchildren in future

generations. Thank you.

[Applause.]

Moderator **Wise.** On behalf of all of us, I want to thank Dr. Preobrazhenska and Mrs. Olshaniwsky for interpreting. I think this has been a fine ending to our morning.

And before closing, I would also like to thank the Washington Chernobyl Committee and Americans for Human Rights in Ukraine for their help with the speakers.

Thank you all for coming.

[Whereupon, the foregoing matter was concluded at 11:55 a.m.]